



TripMaster GFX

USER MANUAL

Contents

Connections	- 2 -
Power Supply	- 4 -
Backup Battery	- 4 -
Current Consumption	- 5 -
Wheel Circumference Setting	- 6 -
GPS Antenna Mounting.....	- 7 -
GPS Antenna Reception	- 7 -
Software Features.....	- 8 -
Button Control Legend.....	- 9 -
Mode Controls	- 10 -
Main Modes Cycle.....	- 11 -
Settings	- 12 -
Setting Options	- 13 -
Setting Descriptions	- 14 -
FAQ	- 16 -
Technical Dimensions	- 17 -

Introduction

Welcome to the newest generation of RNS navigation instruments: the TripMaster GFX.

Developed by rally pilots for rally pilots, the TripMaster GFX offers many fresh and innovative features. Special attention was paid to ensure the best possible readability and ease-of-use for the user whilst offering as many functions as possible.

The new TripMaster GFX was designed implementing the feedback from many riders, both professional and amateur, and manufactured using materials and components of the highest qualities.

We hope you enjoy many kilometres of pleasurable rally racing with your new TripMaster GFX guiding you into the right direction.

Connections

The TripMaster GFX has 4 cables exiting from the rear to allow for the connection of power and accessories.

- 1) Red female connector: 12V power supply
- 2) Grey male connector: external MultiSwitch remote
- 3) Black male connector: wheel sensor
- 4) Black female connector: external GPS antenna



NOTE: All 4 cables should be connected to their designated peripherals to allow for all the features of the instrument to be used.

Power Supply

In order to correctly operate the instrument, it must be connected to a stable 12V power supply on your vehicle. Ideally, the supply should be automatically switched by the vehicle, e.g. through the lighting system when the engine is started.

An inline fuse of 1A is recommended.

Connect the **RED** wire of the included power lead to the positive + pole and the **BLACK** wire to the negative – pole of your supply.

NOTE: Incorrect polarity will not damage the instrument, but it will not function correctly.

Backup Battery

The instrument is equipped with an internal 500mAh capacity Lithium-Polymer battery as a backup power source for when the 12V supply is disconnected.

Upon correct installation of the power supply, the battery will be monitored and charged.

Neither the LED backlight nor the externally connected GPS antenna will run from the internal battery. These features will always require the external power supply.

NOTE: The internal Li-Po battery is **NOT** removable or replaceable.

Current Consumption

The 12V supply will be used as the main source of power when connected.

With the GPS antenna disconnected, the instrument will shut off automatically after 5 minutes of inactivity. The LED backlight will also turn off.

If the antenna is connected the instrument will not automatically shut off. The 12V supply must be switched off in this case to prevent draining the vehicle's battery!

The current draw in the different states is as follows:

- 1) TripMaster GFX on
 - + *GPS antenna connected (cold start)*
 - + *LED backlight on*
 - + *empty backup battery*
 - = ***~210mA MAX***

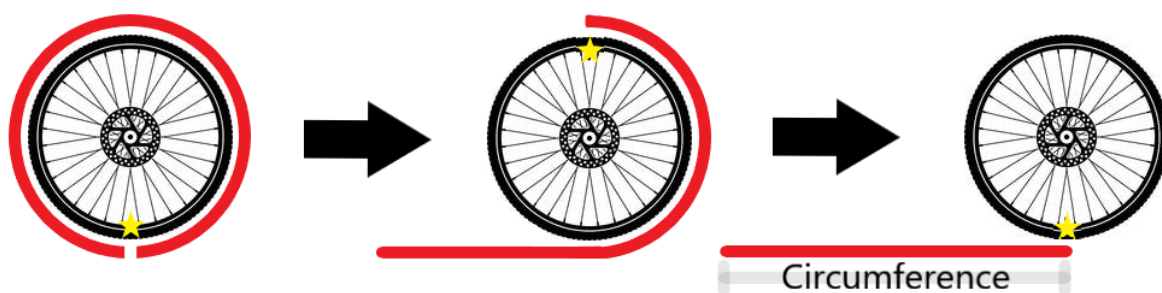
- 2) TripMaster GFX on
 - + *GPS antenna connected (hot start)*
 - + *LED backlight on*
 - + *full backup battery*
 - = ***~140mA***

- 3) TripMaster GFX off
 - + *GPS antenna disconnected*
 - + *LED backlight off*
 - = ***~5mA***

Wheel Circumference Setting

To ensure accurate readings of all the wheel functions, it is crucial that the correct wheel circumference is saved in the instrument's settings. To correctly measure the wheel circumference:

1. Find a flat surface to freely move your vehicle
2. Place a mark on the ground and on the side of the tire which is touching the ground
3. Move your vehicle straight until one entire revolution of the wheel is complete, i.e. the mark on the tire is touching the ground again
4. Place another mark on the ground
5. Measure the distance between the two markings on the ground with a tape-measure
6. Record the measurement in millimetres
7. Follow the flow chart shown later in this manual to enter the wheel settings on the instrument and enter the recorded wheel size



NOTE: Only certain modes will take advantage of the wheel's rotation. These modes are marked with a wheel icon:



GPS Antenna Mounting

Correct installation of the antenna is crucial to ensure a reliable signal and a long lifetime.

Recommended mounting locations of the antenna include the top of navigation towers or the master cylinders of the front brake/hydraulic clutch. Ideally, the antenna should be kept in a horizontal position, not be covered by any materials, including metals, plastics and carbon-fibre, ensuring an unobstructed clear view to the sky.

It is recommended to fix the antenna in place with at least 2 zip-ties and silicone on the bottom side to dampen vibrations.

GPS Antenna Reception

After the external GPS antenna has been connected to the GFX, it will start to acquire its signal from satellites orbiting the earth. The built-in LED of the antenna will light up and the GPS icon on the LCD of the instrument will flash in any of the GPS dependent modes:



Please allow for some time (up to 10 minutes) during the first use of the antenna. Once the antenna has acquired a stable signal the icon will no longer flash and be static. The LED inside the antenna will flash instead. Should at any time the signal become weak the icon will begin to flash again. If the antenna is disconnected or faulty the following icon will appear instead:



Software Features

Given the availability of both a wheel sensor and GPS, the GFX can calculate various data. For example, it is possible to show the trip distance recorded from the rotation of the wheel or from the movement over ground via GPS. Compass heading (CAP) and speed data from GPS are also available as is an atomic clock signal for the accurate time.

In total, 12 modes are available that can be individually enabled/disabled to accommodate the rider's preferences:

- 1) Wheel Trip
- 2) Wheel Speed
 - a. Statistics for top and average speed
- 3) Wheel Trip + Speed
- 4) GPS Trip
- 5) GPS Speed
- 6) GPS Trip + CAP
- 7) Wheel Trip + Wheel Speed + CAP
- 8) Stage Timer (moving time)
- 9) Clock (24h)
- 10) CAP
- 11) CAP + Waypoint Arrow
- 12) GPS Trip + CAP + Waypoint Arrow

NOTE: The arrow functionality of modes 11) & 12) is currently restricted to connected Garmin devices only, and not the external GPS antenna, pending the permission of other manufacturers. These modes are disabled by default in the GPS setting "Antenna".

Button Control Legend





There are two ways to take full control of the GFX instrument:

- 1) Two membrane buttons found on the left side of the unit
- 2) Externally connected RNS MultiSwitch or compatible remote

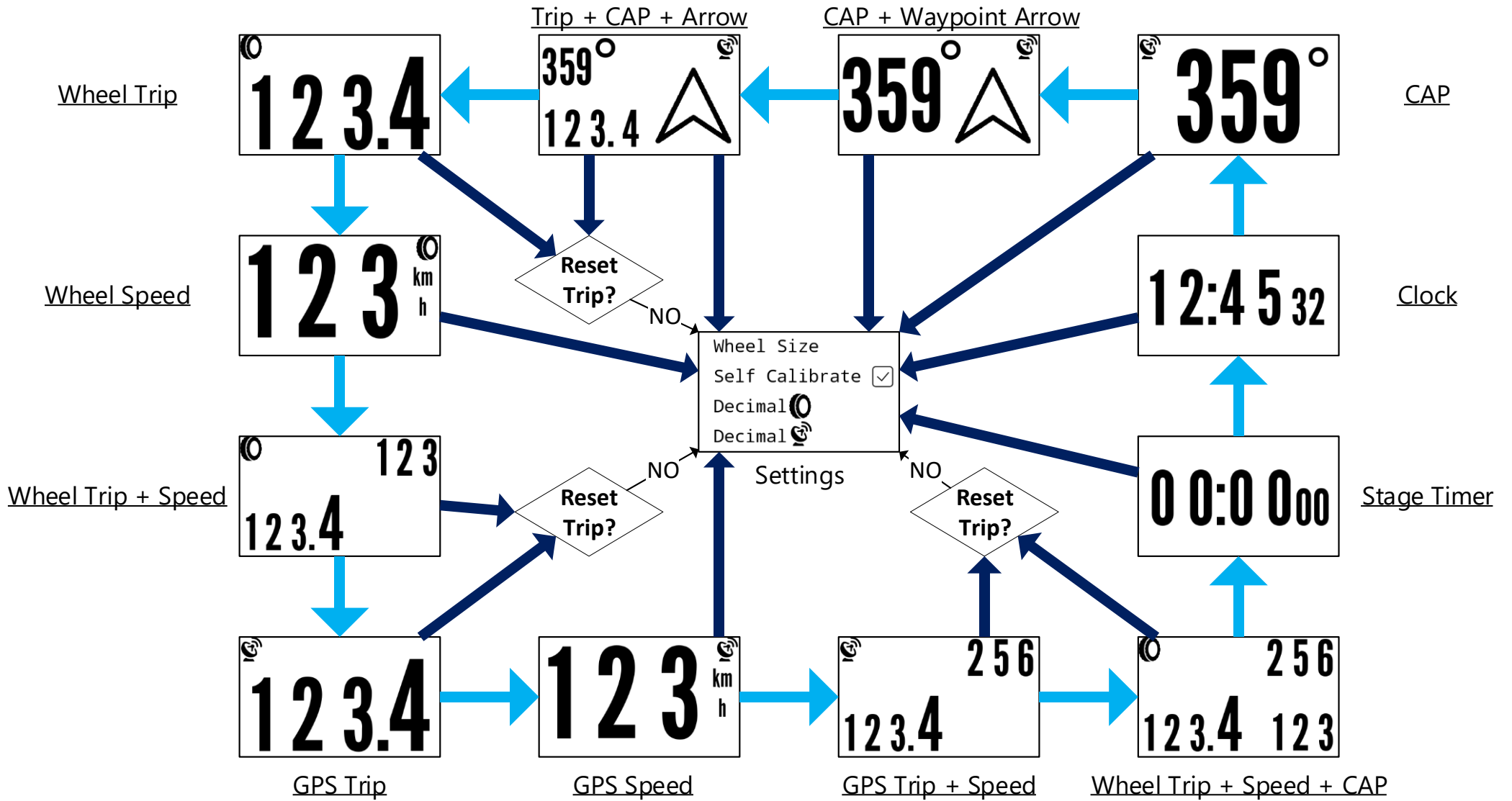


Mode Controls

The majority of the modes function in a similar way and therefore have similar controls:

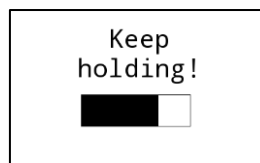
Modes				
1- Wheel Trip 3- Wheel Trip + Speed 4- GPS Trip 6- GPS Trip + CAP 7- Wheel Trip + Speed + CAP 12-GPS Trip	Increment trip	Decrement trip	Switch to next mode	Reset trip or Enter settings
2- Wheel Speed	Show statistics (hold button!)	No Function!	Switch to next mode	Enter settings
5- GPS Speed 8- Timer 9- Clock 10- CAP 11- CAP + Arrow	No Function!	No Function!	Switch to next mode	Enter settings

Main Modes Cycle



Settings

As shown in the diagram on the previous page, the settings menu can be entered from any mode by pressing and holding both buttons on the instrument or holding the mode button on the MultiSwitch. The LCD will show "Keep holding!" with a loading bar underneath:

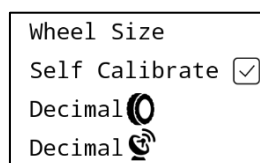


If the settings are being entered from a mode that also shows a trip, the LCD will present the option to reset the trip or enter the settings:



Use the up and down buttons of the GFX or MultiSwitch to move the cursor up and down. Press the two buttons together, or press the mode button on the MultiSwitch, to make your selection.

Once inside the menu, you will be greeted with various settings that can be modified:



Use the up and down buttons to move the cursor and press both together to make your selection.

To leave the settings menu and to return to the previous active mode, move the cursor to "EXIT" and select it.

NOTE: The settings will be automatically exited after 30s of inactivity

Setting Options

The following settings and options are available:

Setting	Description	Options
Wheel Size	Set the wheel circumference in millimetres	1000mm to 2999mm
Self-Calibrate	Enable / disable the self-calibration of the wheel trip	On / Off
Decimal Wheel	Set the trip resolution of the wheel trip	100m / 10m resolution
Decimal GPS	Set the trip resolution of the GPS trip	100m / 10m resolution
Theme	Strong backlight / dark backlight with inverted LCD	Day / Night
Transitions	Show / hide the transitions when switching modes	On / Off
GPS	Source of GPS Data	Antenna / NMEA / Other
GPS Factor	Manually adjust the GPS calibration value	-10% to +10%
Clock	Adjust the time	UTC Offset / Manual Adjustment
Modes	Enable / disable modes	
User Manual	QR code to the online PDF of the user manual	
Update	Software update through USB cable	Factory Reset!
About	Lifetime Odo, Oil-Change Odo, Serial Number	Reset Oil-Change Odo
EXIT	Return to previous mode	

Setting Descriptions

Wheel Size:

Entering this option will open a new page allowing for the adjustment of all 4 digits of the wheel circumference. The cursor can be moved with the down button. The up button is used to increment the selected position. Pressing both buttons together on "SAVE" will save the new value and return to the setting's main menu.

Self-Calibrate:

With this option enabled the GFX will analyse adjustments made to the wheel (not GPS!) trip and accordingly adjust the wheel circumference, e.g. adjusting the trip up means the circumference is too small and it will be increased in steps of 1mm. The special software algorithm prevents undesirable circumference adjustments when large changes to the trip are made, e.g. readjusting the trip after being lost.

GPS:

There are 3 possible options; Antenna, NMEA and Other. "Antenna" is to be set when using the included external antenna. "NMEA" is for the use of an externally connected compatible Garmin unit. "Other" is for other external devices yet to be decided.

GPS Calibrate:

Given that the distance calculated by GPS is dependent on the terrain, i.e. the distance calculated over mountainous terrain is different to that on flat terrain, the user may set a compensation factor between -10% and +10% if desired.

Clock:

With the external GPS antenna connected the user may set the UTC offset in full hours and 15min blocks. Otherwise, when the antenna is disconnected, the user may set the hours and minutes manually similarly to the wheel circumference.

Update:

Should a software update become available, the user has the opportunity to contact his dealer or RNS directly for assistance in upgrading the firmware.

BEWARE!: Pressing the up button on the GFX unit as advised on the LCD will trigger a factory reset of the instrument restoring all settings to their default values!
To leave the page, press the down button on the GFX.

If a factory reset was triggered and the LCD screen is blank, press and hold the down button on the GFX to restart the instrument.

About:

This page shows the serial number, the lifetime odometer of the instrument as well as a resettable oil-change odometer. This oil-change odometer can be reset by holding both buttons on the instrument or the mode button on the MultiSwitch. To leave the page, press the down button.

FAQs

How do I reset the trip?

Press and hold both buttons or the mode button of the MultiSwitch in any mode that shows a trip (wheel or GPS based) until the question whether you would like to reset the trip is presented to you.

How do I start the stage timer?

The stage timer is automatically started once you start moving after having reset the trip.

How do I reset the recorded max and average speed?

These values are reset once the trip is reset. The stage timer will also be reset.

Is the GPS trip as accurate as the wheel one?

During the research and development phase of the GFX we found that there are many external factors involved with the accuracy of the GPS signal acquired by the antenna. An obstructed view to the sky, like from trees in a forest or even clouds, can severely weaken the GPS signal and interfere with the accuracy of the calculated trip.

The topography of the ridden terrain can also have an impact where riding on hilly and mountainous terrain can give a different reading than when riding on flat terrain.

We therefore recommend giving priority to the wheel sensor-based trip. When using the GPS trip, it can be helpful to manually adjust the "GPS factor" in the settings to compensate for errors depending on where you are riding.

Technical Dimensions

